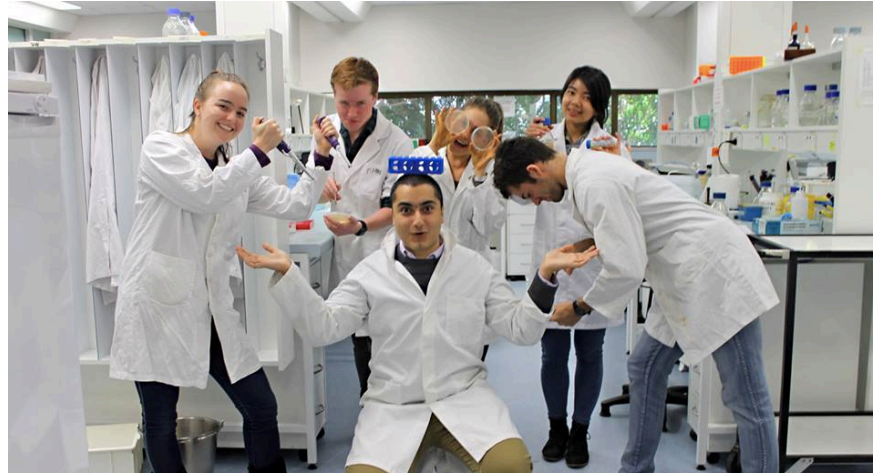


Synthetic Biology and Gene Technology

MycoMimic

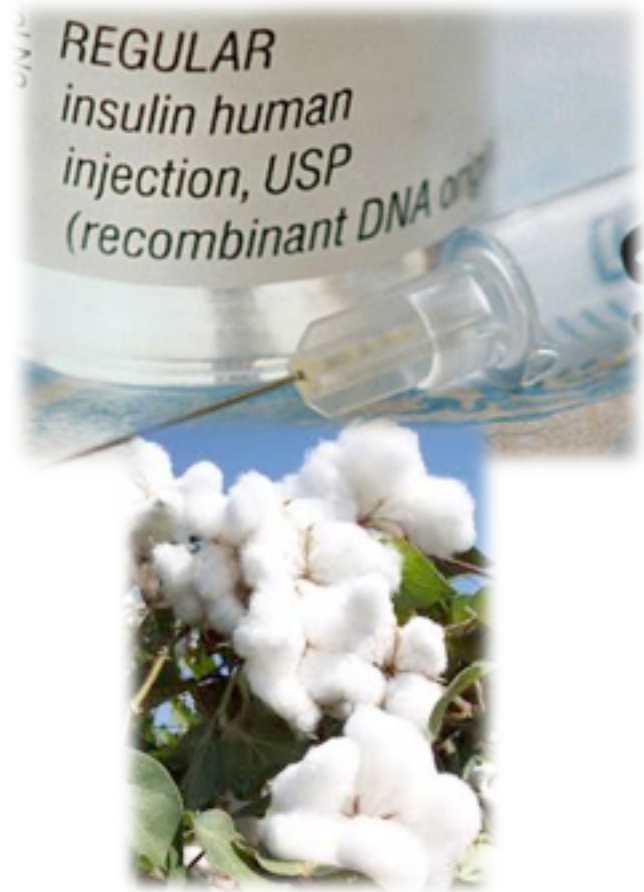


Who are we?

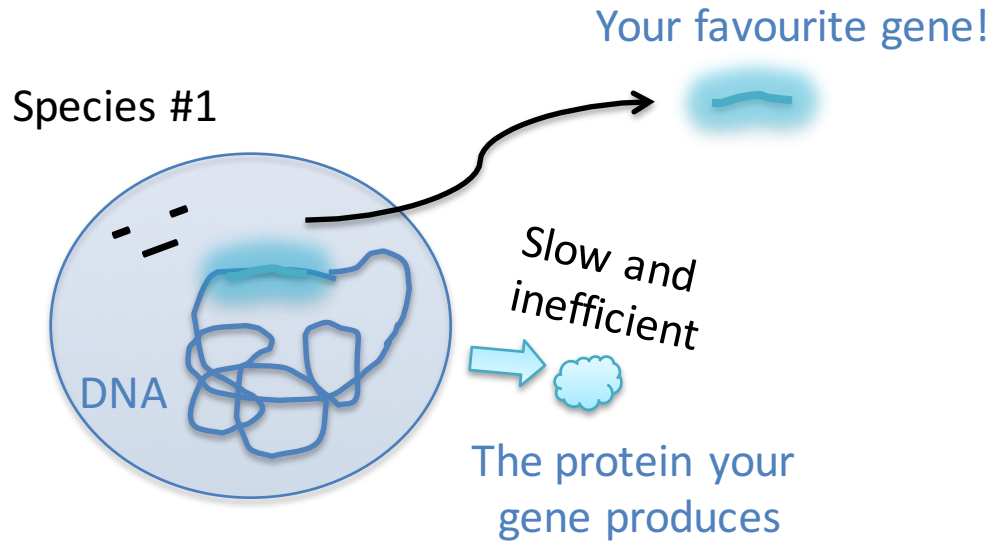


What's Synthetic Biology?

- Using genetic engineering to solve real world problems
 - Insulin for people with diabetes
 - Medicine for haemophilia
 - Disease-resistant crops
 - Lots more!

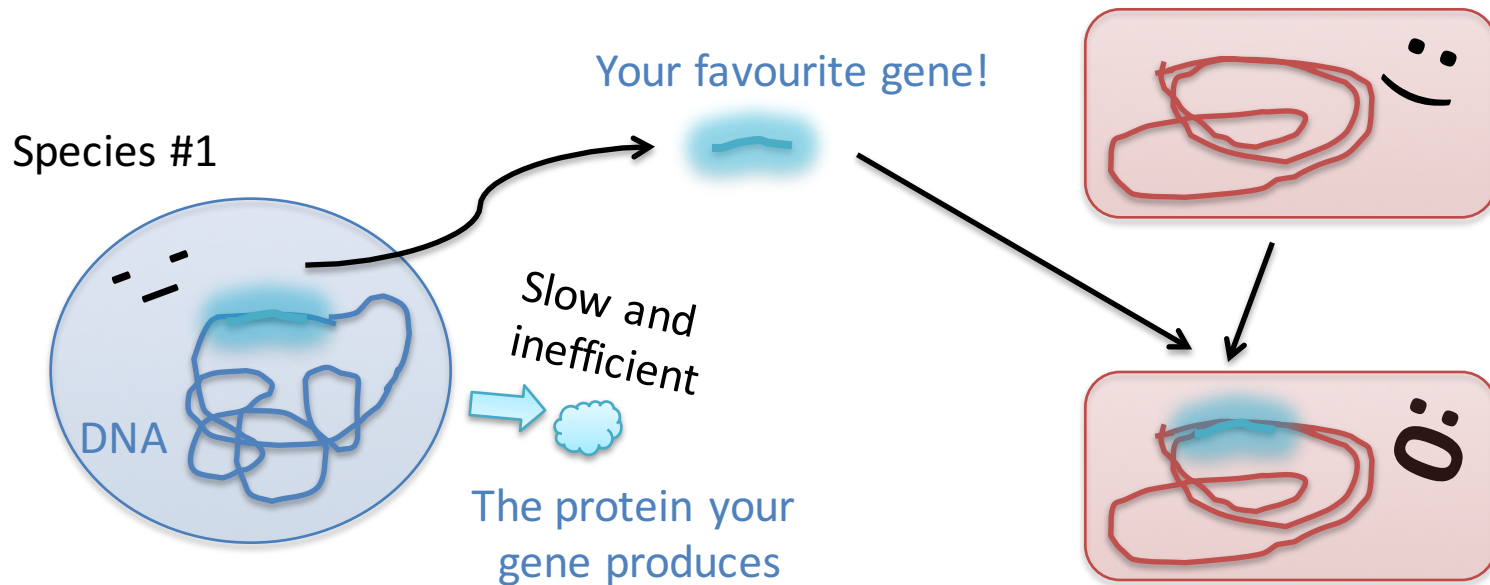


How does it work?



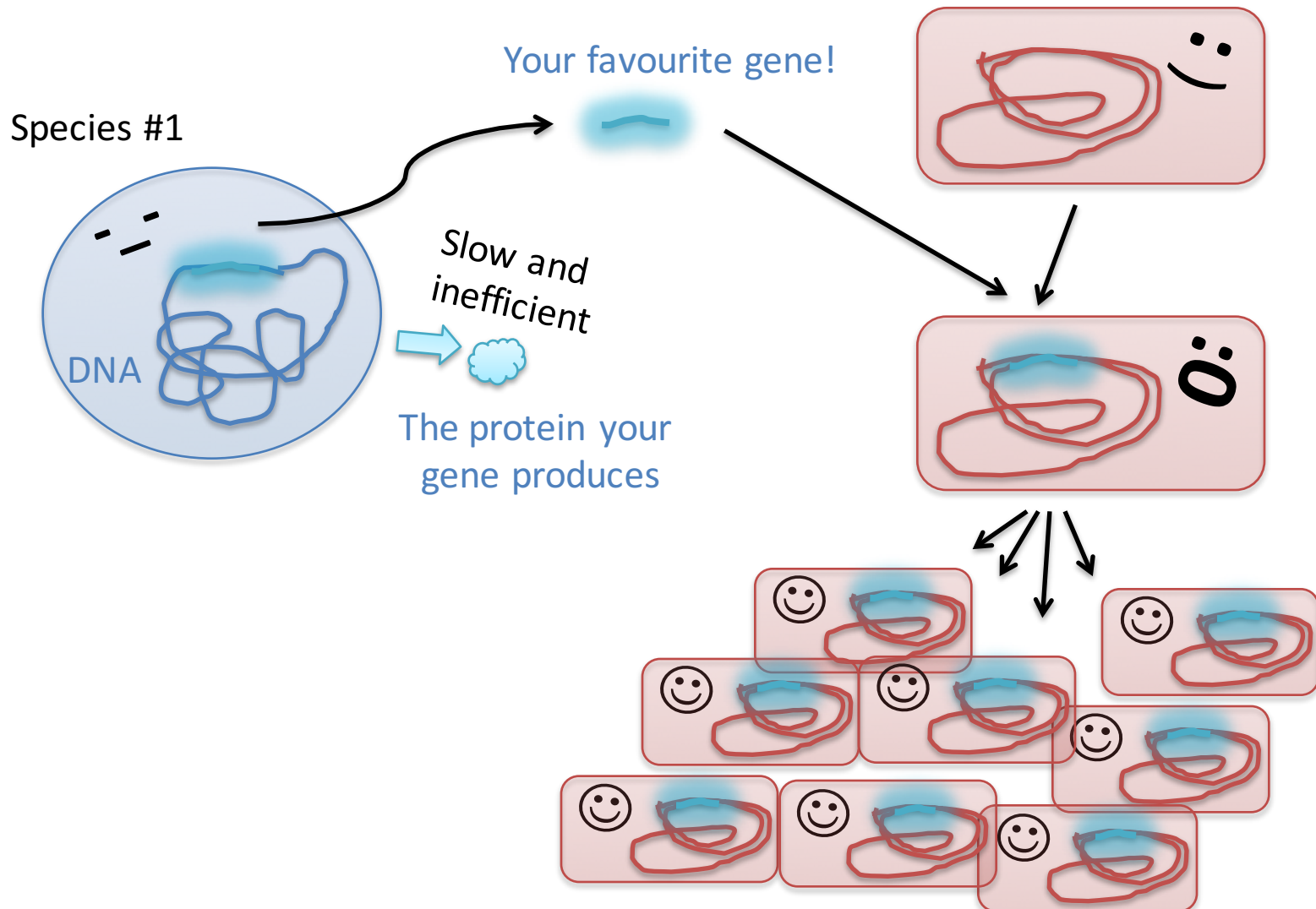
How does it work?

Species #2



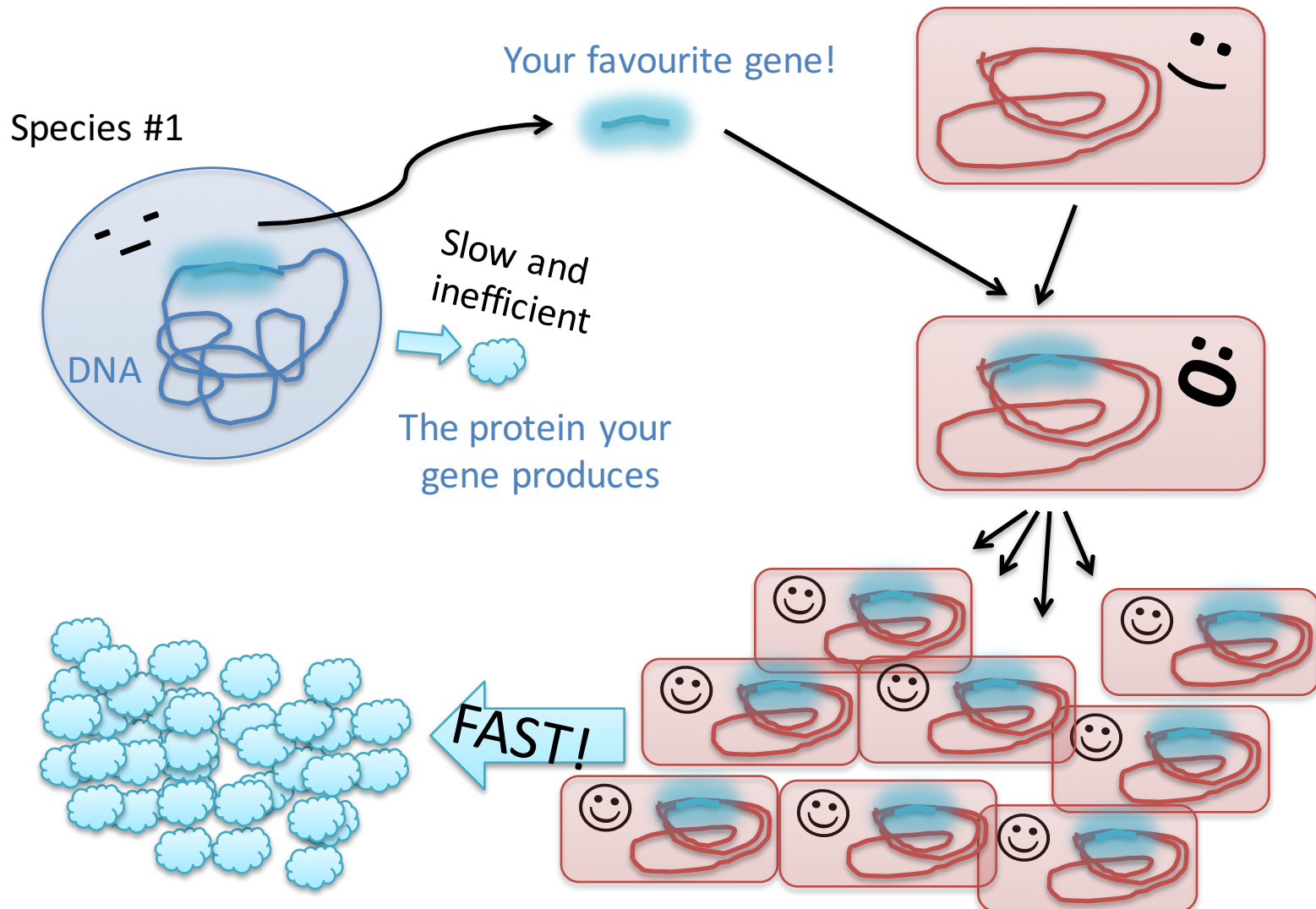
How does it work?

Species #2



How does it work?

Species #2



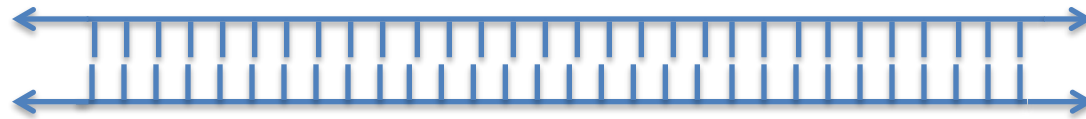
Merlock Holmes and the Mystery of the Stolen Pen

- DNA fingerprinting solves crime
- ONLY need left over cells on scene of crime
- Compare unique genes



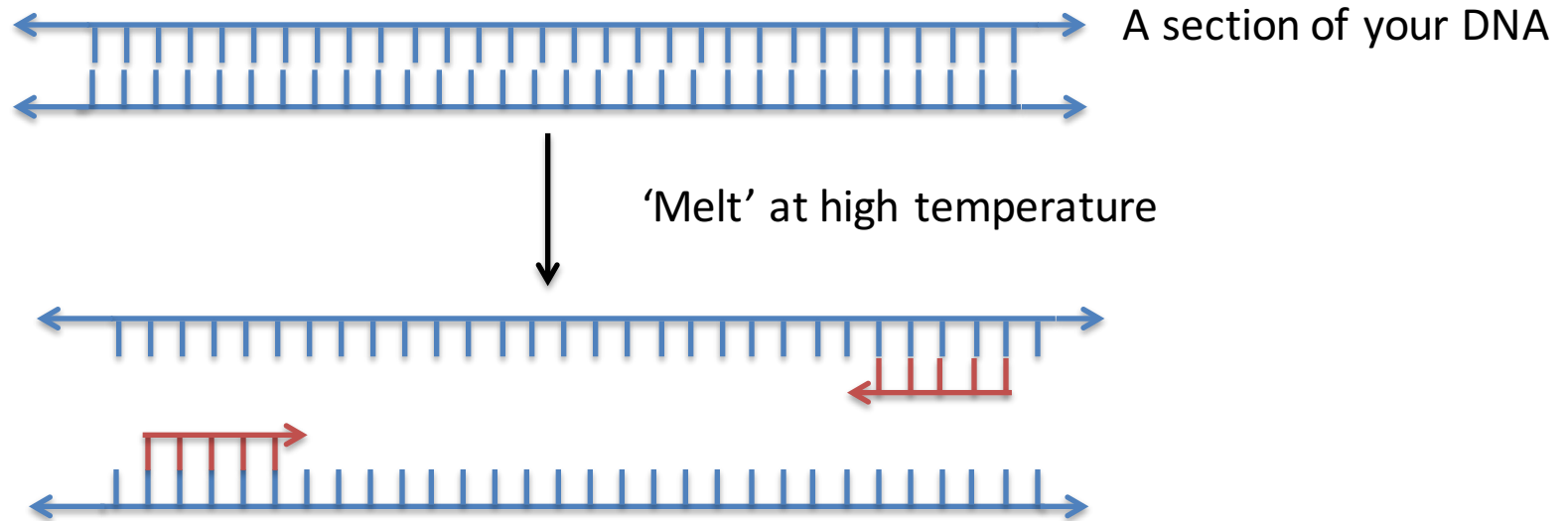
- Need to amplify DNA though ... HOW?

PCR – Polymerase Chain Reaction

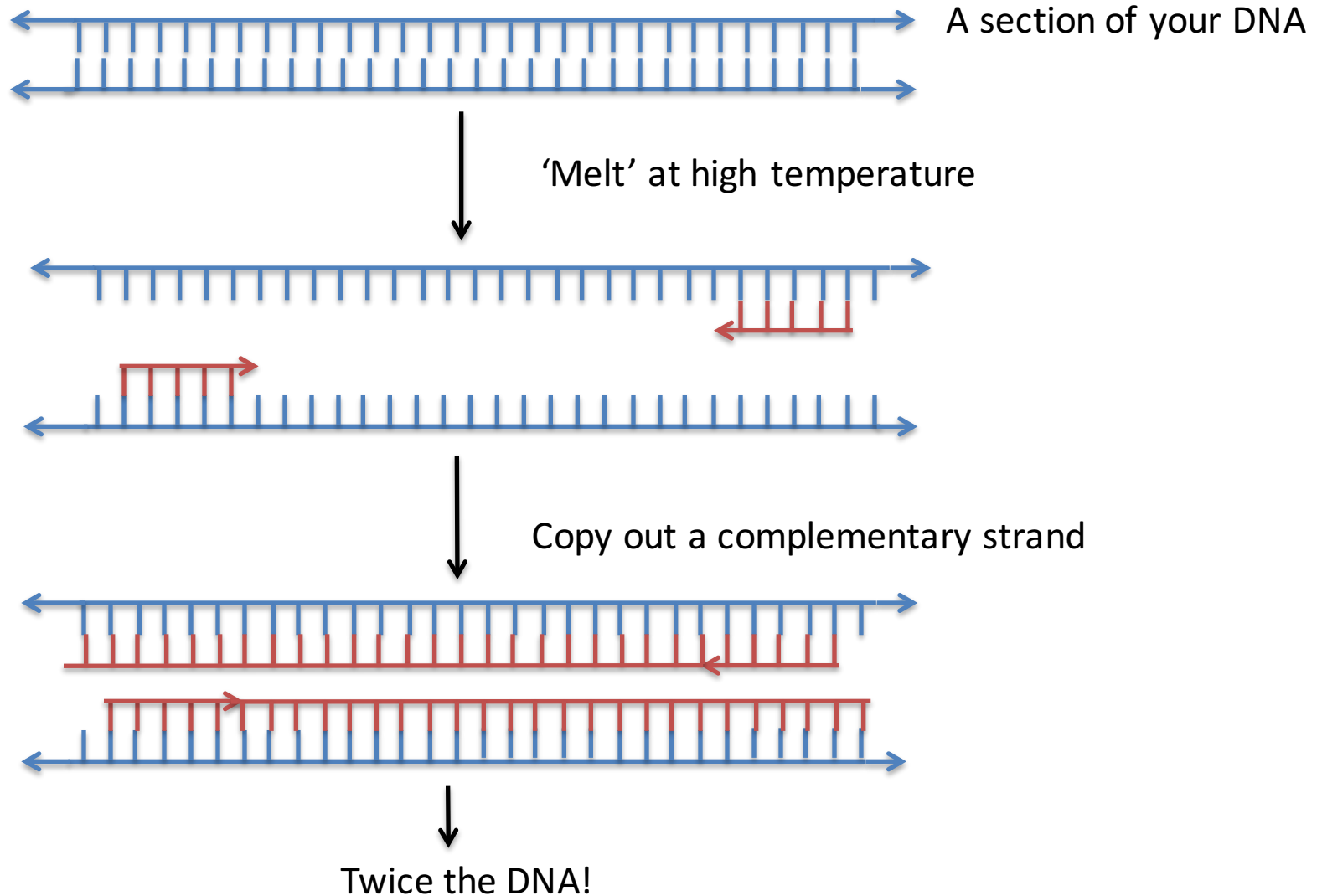


A section of your DNA

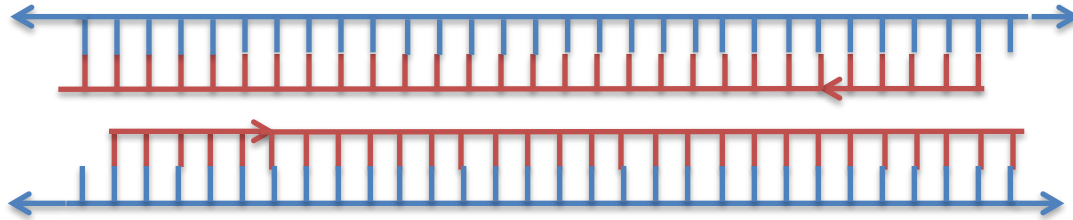
PCR – Polymerase Chain Reaction



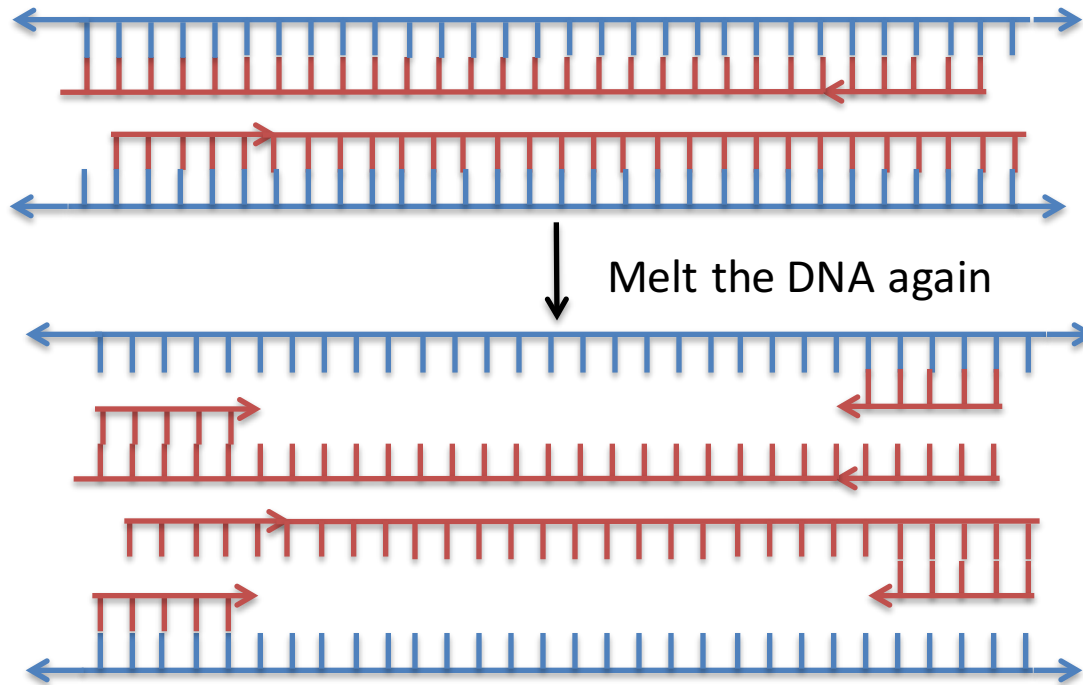
PCR – Polymerase Chain Reaction



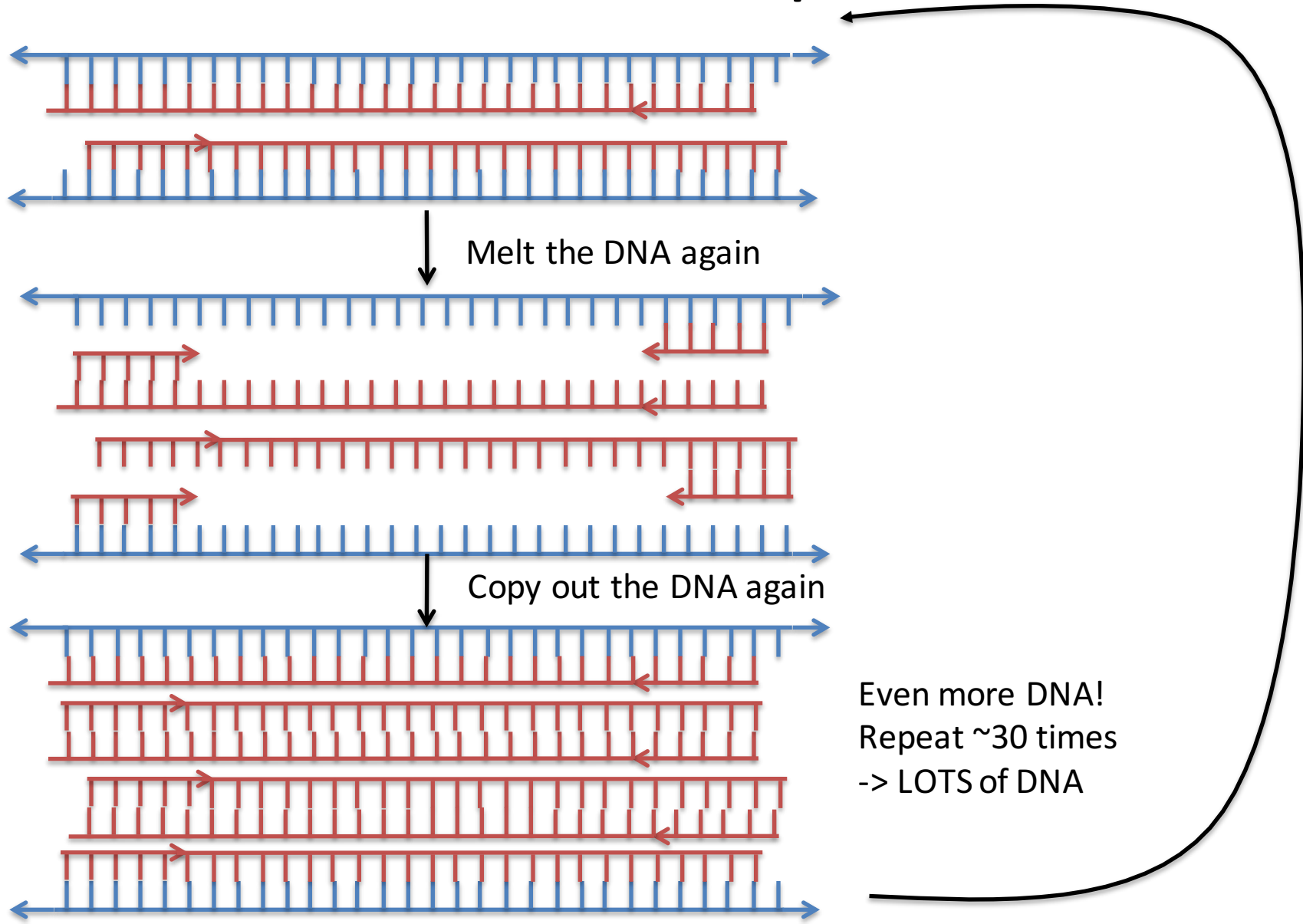
PCR – Part 2: Repeat!



PCR – Part 2: Repeat!



PCR – Part 2: Repeat!



Gel Electrophoresis

Standard
size bits



Test
sample



Sample 1



Sample 2



Sample 3



Gel Electrophoresis

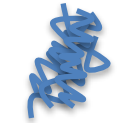
Standard
size bits



Test
sample



Sample 1



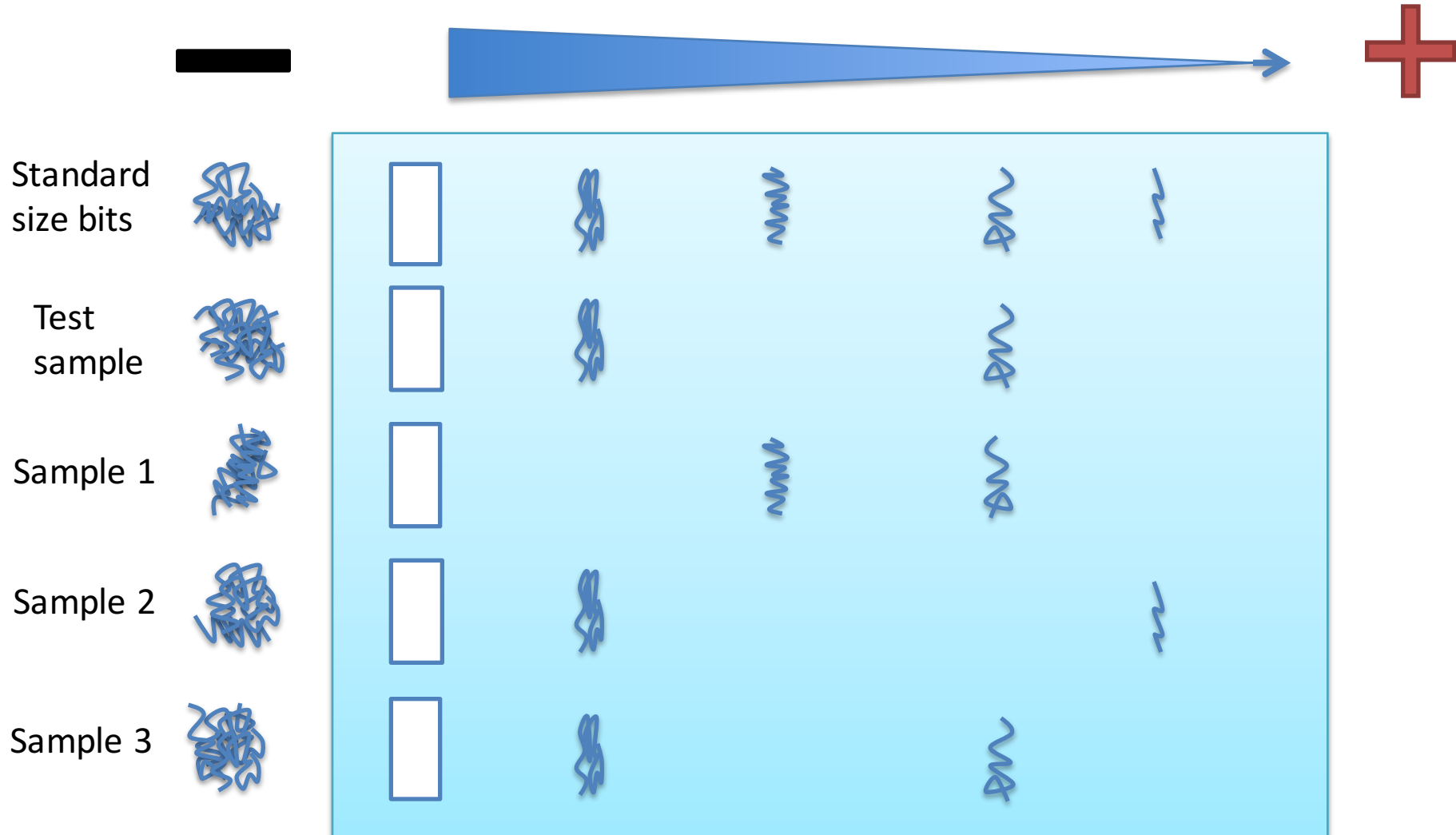
Sample 2



Sample 3

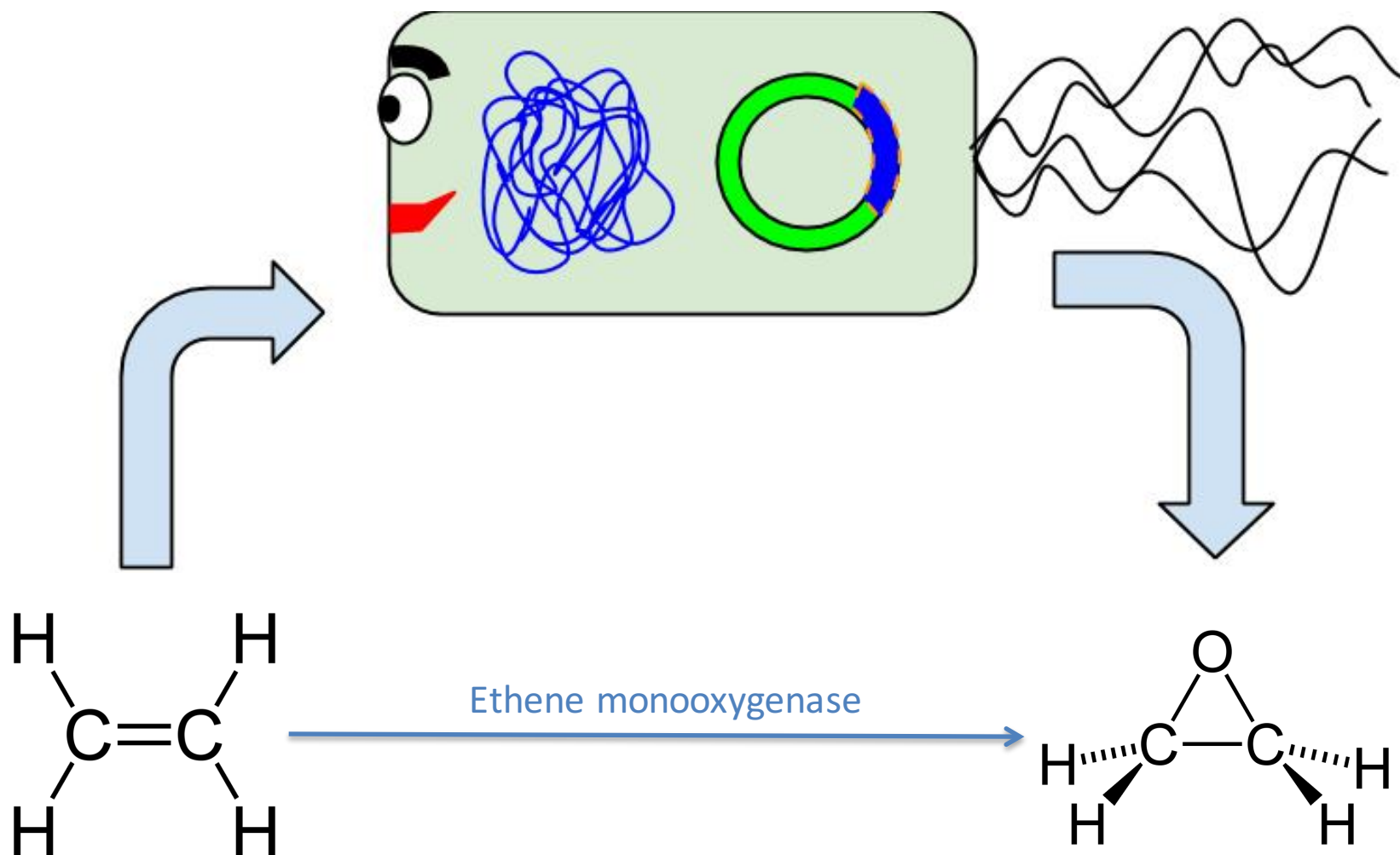


Gel Electrophoresis

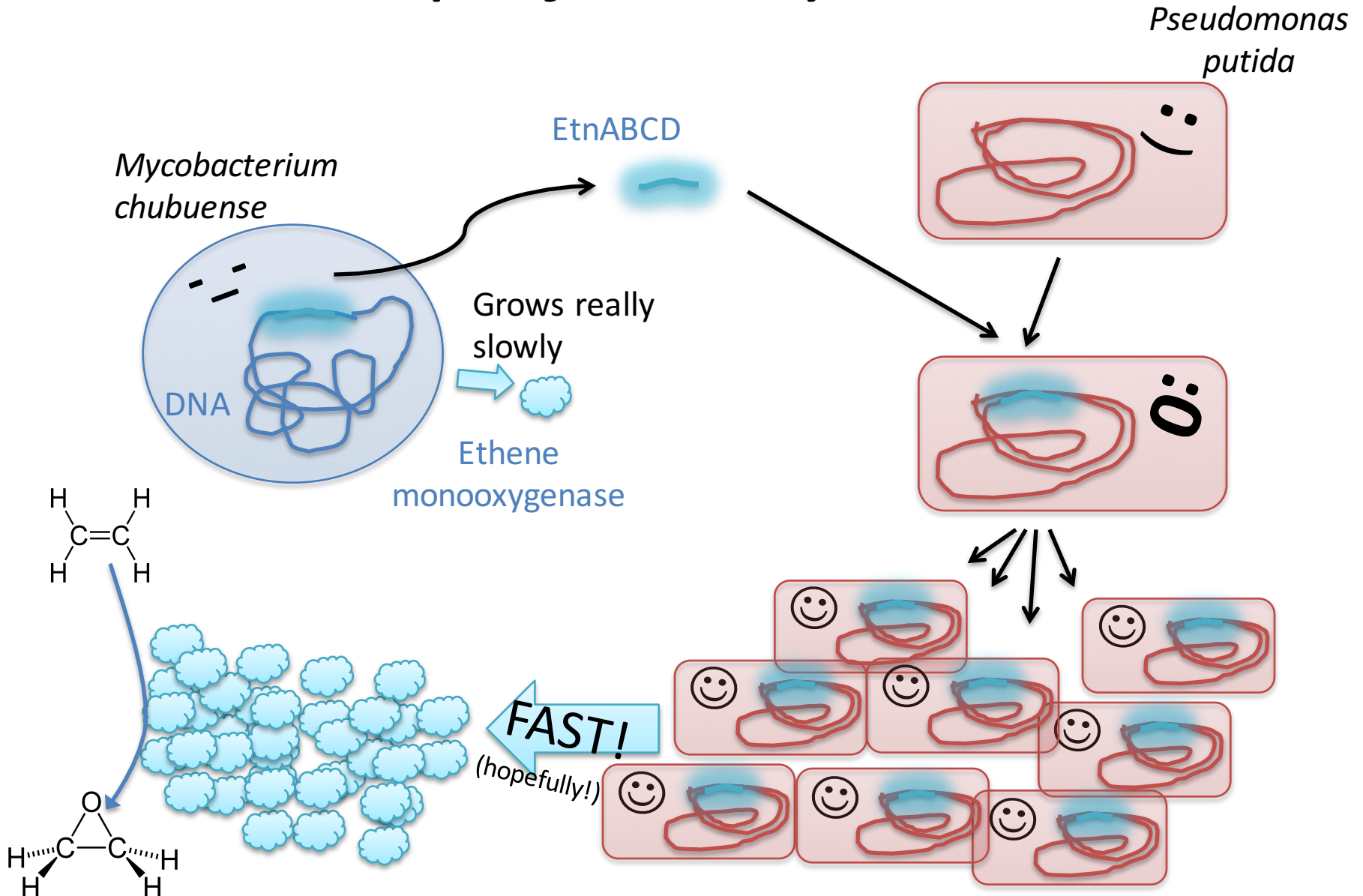


The smaller bits of DNA can squeeze through the gel faster and so bands are visible further down the gel and the smaller fragments separate from the larger ones

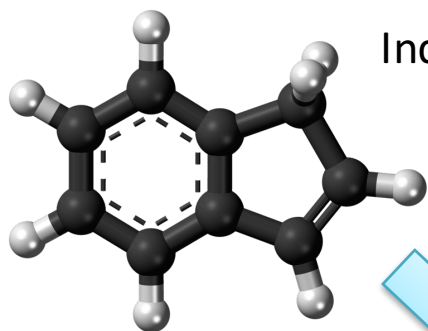
Our project, MycoMimic!



Our project, MycoMimic!

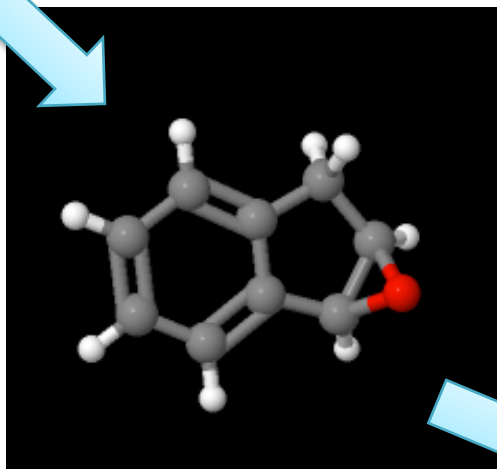


The ultimate goal



Indene (cheap, easy to get from coal tar)

Indene oxide, hard to make correctly
(for now!)



The anti-HIV drug indinavir sulfate
VERY expensive



Strange Nature



- Video, podcast, music video, drama, doco
- Essay, report, critique
- \$500, \$250
- Tour of the lab!

HS 20 JULY 5 -
15 SEPTEMBER 18

Write 1000 words or create
a 5 minute video inspired by
the above discussion statement
- the best entries are awarded
up to \$500!

To learn more, visit
www.strangenature.org

Today's activities

- Teams of 4-6
- Sampling environmental bacteria on agar plates
- Running your gel
- Cool microbes
- Solving the mystery of the stolen pen!
- Cloning activity

Also ...

PLEEEEEEEEEAAAAASE

ask questions!